

### REMARKS

Claims 1, 2, 4, 7, 11 to 18, and 28 are pending in the application, of which claims 1, 13 and 28 are independent.<sup>1</sup> Favorable reconsideration and further examination are respectfully requested.

Initially, claims 27 and 28 were rejected under the first paragraph of 35 U.S.C. §112 for the reasons noted on page 2 of the Office Action. Without conceding the propriety of the rejection, the feature objected to has been removed from claim 28.

The claims were also rejected under the first paragraph of 35 U.S.C. §112 for the reasons noted on page 3 of the Office Action. In particular, the Office Action argues that counter-doping would "completely neutralize any opposite doping concentration". While that may be the case, depending on doping levels, we respectfully direct the Examiner to Fig. 1 of the application. Claim 1, for example, recites a first doping layer...that extends into the extrinsic region, and that is counter-doped with a pentavalent substance from the emitter region. The claim does not say that the entire layer is counter-doped. In the example shown in Fig. 1, first doping layer 7 extends into extrinsic region 6. That portion of first doping layer 7 in extrinsic region 6 is not counter-doped, leaving that portion of first doping layer 7 (or at least parts far enough away from the intrinsic region) unaffected by the counter-doping. Consequently, the claimed first doping layer is still present, even though it has been counter-doped. The same holds true for the second doping layer 9, and for such layers in claims 13 and 28.

For at least the foregoing reasons, withdrawal of the §112, first paragraph, rejection is respectfully requested.

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<sup>1</sup> The Examiner is urged to independently confirm this recitation of the pending claims.

Turning to the art rejections, claims 1 to 5, 7 to 17, and 19 to 28 were rejected over WO01/91162 (Asai) or over Asai in view of the Osten article; and claim 18 was rejected over Asai, the Osten article, and U.S. Patent No. 5,140,400 (Morishita).

The applied art is not understood to disclose or to suggest features of the claims. In particular, the art is not understood to disclose or to suggest at least a first doping layer that is doped with a trivalent substance; a second doping layer that is doped with a trivalent substance, and that is between the first doping layer and a collector; and a third doping layer that is doped with a trivalent substance, and that is between the second doping layer and the collector. Use of separate layers is advantageous because the doping-substance concentration of each layer may be made essentially constant, as described in the specification (see also Fig. 2).

Asai does not disclose separately-doped layers. Instead, Asai discloses a single layer 153 that is doped with boron at its top and at its bottom (via diffusion from lower layer 152).<sup>2</sup> The doping concentrations of boron through single layer 153 are depicted in Fig. 2(b). This single layer 153, and its different doping concentrations, were equated to the first, second and third layers of the claims. However, as is clear from the figures and text of Asai, although there are different dopings, they all occur in single layer 153. Moreover, as shown in Fig. 2(b) of Asai, use of a single layer does not provide essentially constant doping-substance concentrations.

The remaining art, namely Morishita and Osten, is not understood to disclose or to suggest the foregoing features of the claims. Accordingly, independent claims 1, 13 and 28 are believed to be patentable over the art.

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<sup>2</sup> Col. 10, lines 41 to 45

Each of the dependent claims is also believed to define patentable features of the invention. Each dependent claim partakes of the novelty of its corresponding independent claim and, as such, has not been discussed specifically herein.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Please apply any additional fees due for this Amendment to deposit account 06-1050, referencing Attorney Docket No. 14603-007US1.

Respectfully submitted,

Date:

29 November 2007



Jeffrey J. Barclay  
Reg. No. 48,950